MS APPEAL BRIEF - PATENTS
Docket No.: 0171-0778P
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Takaya SATO et al.

Application No.: 09/940,541 Confirmation No.: 4738

Filed: August 29, 2001 Art Unit: 1746

For: LITHIUM BASED BATTERY Examiner: J. Crepeau

APPEAL BRIEF TRANSMITTAL FORM

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is an Appeal Brief on behalf of the Appellants in connection with the above-identified application.

☒ The enclosed document is being transmitted via the Certificate of Mailing provisions of 37 C.F.R. § 1.8.

A Notice of Appeal was filed on January 26, 2006.

☐ Applicant claims small entity status in accordance with 37 C.F.R. § 1.27.

The fee has been calculated as shown below:

03/28/2006 JADD01 00000066 09940541
01 FC:1402 500.00 OP

☐ Extension of time fee pursuant to 37 C.F.R. §§ 1.17 and 1.136(a) - $.

☒ Fee for filing an Appeal Brief - $500.00 (large entity).

☒ A Check in the amount of $500 is attached.

☐ Please charge Deposit Account No. 02-2448 in the amount of $. A triplicate copy of this sheet is attached.

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Dated: March 27, 2006

Respectfully submitted,

By #28,781

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Attachment(s)

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Application No.: 09/940,541 Confirmation No.: 4738

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BRIEF ON APPEAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an appeal from the September 26, 2005 final rejection of claims 1-8.

(i) Real party in interest.

The real party in interest in the appeal is the Assignee of the present patent application, ITOCHU CORPORATION of Osaka, Japan.

(ii) Related appeals and interferences.

There are no related appeals or interferences.

(iii) Status of claims.

Claims 1-8, which are all of the claims in the application, stand rejected.

(iv) Status of Amendments.

On December 19, 2005, Appellant filed a proposed Amendment after Final Rejection. In an Advisory Action that was mailed on January 6, 2006, the Examiner indicated that the proposed Amendment after Final Rejection would not be entered. Accordingly, the claims on appeal are the claims as presented in the Amendment which had been filed on May 23, 2005.

(v) Summary of claimed subject matter.

The battery of the present invention has a battery container with a covering which has been applied over the outer peripheral surface of the container. This separate covering consists essentially of an ion impermeable and extensible high polymer sheet having a tensile elongation percentage of 1% or more. In accordance with the present invention, the battery container and the high polymer sheet are not laminated and united together. See Figures 1, 4, and 7. Therefore, if a nail pierces the battery, the covering – which consists essentially of the high polymer sheet and is not laminated onto the container – extends between the positive and negative electrodes through the battery container, in order to prevent a large current from instantly flowing between the electrodes. See Figure 15.

The independent claims on appeal are claims 1 and 3. Both of these claims recite a lithium-based battery comprising a battery container. The battery container contains within it a

cell structure group formed by stacking unit cells each including a positive electrode, a negative electrode, and a separator interposed therebetween (specification, page 19, line 16 – page 21, line 16), or the cell structure group may be formed by repeatedly folding or winding an integral body of the unit cells (specification, page 3, lines 18-20). The battery container also contains within it an electrolyte, which is poured into the battery container after the cell structure group is contained in the battery container (specification, page 24, lines 16-33). In accordance with the present invention, the battery is characterized by the presence on the outer peripheral surface of the battery container of a covering that consists essentially of an ion impermeable and extensible high polymer sheet having a tensile elongation percentage of 1 % or more. Specification, page 9, lines 16-31: "The tensile elongation percentage of the extensible high polymer sheet 7 of the present invention is in a range of 1 % or more ... . In the case where the tensile elongation percentage of the high polymer sheet covering the battery container is excessively small, if there happens an accident due to external causes, for example, if a nail pierces the battery, ... the buttery [sic] may be burst and/or ignited". In accordance with the present invention, the tensile elongation of the battery container covering is selected to cause the sheet to provide insulation between the positive and negative electrodes of the battery when the container is deformed. Specification, page 5, lines 29-30: "... the high polymer sheet is effectively deformed between the positive and negative electrodes ... ." Independent claim 3 additionally recites that the outer periphery of the cell structure group is covered with a sheet consisting essentially of an ion impermeable and extensible high polymer sheet having a tensile elongation percentage of 1 % or more. Specification page 6, lines 3-13.

(vi) Grounds of rejection to be reviewed on appeal.

The sole ground of rejection to be reviewed on appeal is the rejection of claims 1-8 under 35 U.S.C. §103(a) as being unpatentable over JP 10-208708 (JP '708) in view of JP 2000-173564 (JP '564).

(vii) Argument.

JP '708 teaches laminating a fusion-type resin film on an inner side of a metallic foil and laminating a polyethylene terephthalate film on the other side of the metallic foil to obtain a laminated film package containing a power generation element – i.e., a battery. See the English language Abstract of JP '708. The Examiner admits that JP '708 does not teach the invention "as recited in claims 1 and 3". Final Rejection, page 3, lines 3-5. The Examiner argues that an "artisan would be motivated by the disclosure of JP '564 to use a highly elastic thin film as the outer layer of the bag of JP '708". Final Rejection, page 3, lines 11-12.

The alleged basis for this motivation is the teaching in JP '564 that the impact-absorbing property of the bag body of the battery bag disclosed in JP '564 can be increased while maintaining the flexibility thereof by providing "outer rubber layer 6" on the surface of the bag body. As shown e.g. in Figure 1 of JP '708, outer layer 6 is provided on the surface of the battery container by being adhered to metal layer 4 by adhesive layer 5. As pointed out in paragraph [0027] of JP '564 and depicted in Figure 6 thereof, when a needle 17 penetrates the battery, the laminated outer layer 6 does not move into the battery and shield the electrodes from one another. Instead, JP '564 teaches "for the outside rubber layer 6 to revert, for a hole to be plugged up, when a needle is extracted". JP '564, paragraph [0027]. Clearly, the combination of

JP '564 with JP '708 at best teaches a battery with a flexible layer laminated (adhered) to its outside.

Each of claims 1-8 herein expressly recites the feature: "the tensile elongation of the battery container covering is selected to cause the sheet to provide insulation between the positive and negative electrodes of the battery when the container is deformed". The Examiner has failed to demonstrate that the references teach or suggest this aspect of the claimed invention. Accordingly, the Examiner has failed to state a sustainable rejection of claims 1-8.

Each of claims 1-8 herein expressly recites the feature: "said battery is characterized by the presence on the outer peripheral surface of said battery ***container*** of a ***covering*** that consists essentially of an ion impermeable and extensible high polymer sheet having a tensile elongation percentage of 1 % or more". Emphasis supplied. "The lithium based battery of the present invention is characterized in that the outer peripheral surface of the battery ***container*** 6[1] is ***covered*** with the ion impermeable and extensible high polymer sheet 7 ... ." Specification, page 9, lines 5-9, emphasis supplied. There can be no doubt that in the present invention the "cover" is in addition to (that is, not identical with) the container.

Theoretically, the term "covered" could be construed to include coverings that are laminated to the containers. However, it is axiomatic that the claims must be construed in the light of the specification. The Board's attention is respectfully directed to Figures 1 and 7, in which covering 7 is clearly depicted as being separate from container 6. The specification refers to the drawings to show what it means by the term "covering". "Referring to FIG. 1, the lithium

[1] Note that container 6 may be formed of metal foil which may have a polymer film laminated to it. Specification, page 8, lines 33-36. That polymer film may be, but need not be, made from the same polymer as is separate polymer layer 7. Original specification, page 9, lines 9-15.

base battery C ... is obtained by ... containing the cell structure group M in a battery container 6; ... and covering the outer peripheral surface of the battery container 6 with an ion impermeable and extensible high polymer sheet 7 ... ." Specification, page 7, line 36 – page 8, line 7. Likewise, "... as shown in FIG. 7, the outer periphery of the cell structure group M is covered with the ion impermeable and extensible high polymer sheet 7 having a tensile elongation percentage of 1 % or more, and further the outer peripheral surface of the battery container 6 is covered with the ion impermeable and extensible high polymer sheet 7 having a tensile elongation percentage of 1 % or more ... ." Specification, page 31, lines 6-13. Visual inspection of Figures 1 and 7 readily reveals that covering 7 is not laminated or adhered to container 6.[2]

JP '708 and JP '564 disclose batteries having a container made of ***laminated*** film, the laminated film being made up of metal foil and elastic high polymer sheets. The object of the prior art is to prevent nails from piercing the battery container by using the laminated film that includes an elastic high polymer layer. In contrast, the present invention covers the battery container with a ***separate*** high polymer sheet. Then if for instance a nail pierces the battery of the present invention, the nail pushes the high polymer sheet to a position between the positive and negative electrodes of the battery container together with the nail, which avoids high current from instantly flowing between the electrodes. In JP '708 and JP '564, since the high polymer sheet and the battery container are united to one another by sheet lamination, ***the high polymer***

[2] If Appellant had contemplated the use of lamination or an adhesive, it would have been disclosed. Compare *Ex parte Parks*, 30 USPQ 2d 1234 (BPAI 1994), where the claimed process, unlike the prior art, did not use a catalyst. The Board noted that the originally filed disclosure would have conveyed to one of ordinary skill in the art the concept of conducting the reaction without the use of a catalyst. The Board indicated that the disclosure described several examples of the process without the mention of a catalyst, even though "the discussion would seem to cry out for a catalyst if one were used." 30 USPQ2d at 1236. The Board was therefore of the opinion that the original description adequately supported considering the claimed process as being conducted without the presence of a catalyst. Here, Appellant's specification cries out for mention of a lamination adhesive if one were used.

sheet portion of the laminate cannot stretch elastically, so that it cannot be interposed between the two electrodes through the container. Manifestly, the batteries of JP '708 and JP '564 cannot achieve the beneficial emergency insulation effect provided by the present invention.

Summary

In JP '708 and JP '564, high polymer sheets may constitute the outermost layer of the battery containers themselves. However, the battery containers are made of laminated film containing both the metal foil and the high polymer sheet. In contrast, the battery of the present invention is characterized in that the outer peripheral surface of the battery container (which container may be a laminate) is covered with a ***separate*** ion impermeable and extensible high polymer sheet having a tensile elongation percentage of 1% or more. This double covering feature of the present invention is neither taught nor suggested by JP '708 or by JP '564, alone or in combination.

In any event, each of claims 1-8 herein expressly recites the feature: "the tensile elongation of the battery container covering is selected to cause the sheet to provide insulation between the positive and negative electrodes of the battery when the container is deformed". The Examiner has failed even to allege that the references teach or suggest this aspect of the claimed invention. Accordingly, the Examiner has failed to state a sustainable rejection of claims 1-8.

Applicants respectfully submit that the features of the invention reflected in the present claims would not be derived by persons of ordinary skill in the art from the disclosures of JP

'708 and JP '564, individually or in combination. Accordingly, it is respectfully requested that the rejection of record be withdrawn.

If there are any questions, the Examiner and/or the Board is/are respectfully requested to telephone Richard Gallagher, Reg. No. 28,781, at (703) 205-8008.

Dated: March 27, 2006

Respectfully submitted,

By R. Gallagher #28,781

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(viii) Claims Appendix.

1. A lithium based battery comprising a battery container containing therein:

a cell structure group formed by stacking unit cells each including a positive electrode, a negative electrode, and a separator interposed therebetween, or formed by repeatedly folding or winding an integral body of said unit cells; and

an electrolyte, which is poured in said battery container after said cell structure group is contained in said battery container,

wherein said battery is characterized by the presence on the outer peripheral surface of said battery container of a covering that consists essentially of an ion impermeable and extensible high polymer sheet having a tensile elongation percentage of 1 % or more, and

wherein the tensile elongation of the battery container covering is selected to cause the sheet to provide insulation between the positive and negative electrodes of the battery when the container is deformed.

2. A lithium based battery according to claim 1, wherein the outer periphery of said cell structure group is covered with a sheet consisting essentially of an ion impermeable and extensible high polymer sheet having a tensile elongation percentage of 1 % or more, the tensile elongation of the cell structure group cover sheet being selected to cause the sheet to provide insulation between positive and negative electrodes of the battery when the container is deformed.

3. A lithium based battery comprising a battery container containing therein:

a cell structure group formed by stacking unit cells each including a positive electrode, a negative electrode, and a separator interposed therebetween, or formed by repeatedly folding or winding an integral body of said unit cells; and

an electrolyte, which is poured in said battery container after said cell structure group is contained in said battery container,

wherein said battery is characterized by the presence on the outer peripheral surface of said battery container of a covering that consists essentially of an ion impermeable and extensible high polymer sheet having a tensile elongation percentage of 1 % or more,

wherein the tensile elongation of the battery container covering is selected to cause the sheet to provide insulation between the positive and negative electrodes of the battery when the container is deformed, and

wherein also the outer periphery of said cell structure group is covered with a sheet consisting essentially of an ion impermeable and extensible high polymer sheet having a tensile elongation percentage of 1 % or more.

4. A lithium based battery according to claim 3, wherein said positive electrode and said negative electrode of each of said unit cells are respectively formed on one surface of a positive collector and one surface of a negative collector in such a manner as to face to each other with said separator put therebetween; and

an ion impermeable and extensible high polymer sheet having a tensile elongation percentage of 1 % or more is disposed between adjacent two of said unit cells and/or on the outer

peripheral surface of each of said unit cells, the tensile elongation of said high polymer sheet being selected to cause the sheet to provide insulation between positive and negative electrodes of the battery when the container is deformed.

5. A lithium based battery according to claim 2, wherein said positive electrode and said negative electrode of each of said unit cells are respectively formed on one surface of a positive collector and one surface of a negative collector in such a manner as to face to each other with said separator put therebetween; and

an ion impermeable and extensible high polymer sheet having a tensile elongation percentage of 1 % or more is disposed between adjacent two of said unit cells and/or on the outer peripheral surface of each of said unit cells, the tensile elongation of said high polymer sheet being selected to cause the sheet to provide insulation between positive and negative electrodes of the battery when the container is deformed.

6. A lithium based battery according to claim 1, wherein said extensible high polymer sheet is made from at least one kind selected from a group consisting of a polyurethane based elastomer and a fluorine based elastomer.

7. A lithium based battery according to claim 3, wherein each of said high polymer sheets said extensible high polymer sheet is made from at least one kind selected from a group consisting of a polyurethane based elastomer and a fluorine based elastomer.

8. A lithium based battery according to any one of claims 1 to 7,

wherein said extensible high polymer sheet has a tensile elongation percentage of 200% or more throughout the temperature range –20 to +80 °C.

(ix) Evidence Appendix.

No evidence is relied upon by the Examiner or by Appellant.

(x) Related proceedings Appendix.

Not applicable.

PTO/SB/17 (12-04v2)
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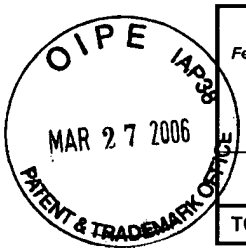
IPW



Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL
For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 500.00

Complete if Known	
Application Number	09/940,541-Conf. #4738
Filing Date	August 29, 2001
First Named Inventor	Takaya SATO
Examiner Name	J. Crepeau
Art Unit	1746
Attorney Docket No.	0171-0778P

METHOD OF PAYMENT (check all that apply)

☒ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☐ Deposit Account Deposit Account Number: 02-2448 Deposit Account Name: Birch, Stewart, Kolasch & Birch, LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☒ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
Application Type	**Fee ($)**	**Small Entity Fee ($)**	**Fee ($)**	**Small Entity Fee ($)**	**Fee ($)**	**Small Entity Fee ($)**	**Fees Paid ($)**
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	**Fee ($)**	**Small Entity Fee ($)**
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims		**Extra Claims**	**Fee ($)**	**Fee Paid ($)**
_____	- =	_____	x _____	= _____

Multiple Dependent Claims

Fee ($)	**Fee Paid ($)**
_____	_____

Indep. Claims		**Extra Claims**	**Fee ($)**	**Fee Paid ($)**
_____	- =	_____	x _____	= _____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets		**Extra Sheets**		**Number of each additional 50 or fraction thereof**	**Fee ($)**	**Fee Paid ($)**
_____	- 100 =	_____	/50	_____ (round up to a whole number) x	_____	= _____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	
Other (e.g., late filing surcharge): 1402 Filing a brief in support of an appeal	500.00

SUBMITTED BY

Signature	Reg. #28,781	Registration No. (Attorney/Agent)	28,977	Telephone	(703) 205-8000
Name (Print/Type)	Gerald M. Murphy, Jr.			Date	March 27, 2006

Birch, Stewart, Kolasch & Birch, LLP

GMM/RG/mao